REMARKS

Claims 1-3 and 5-12 are pending in the application and stand rejected. By the above amendment, claims 1 and 7 have been amended and claims 2-3, 5-6, and 8-12 have been canceled without prejudice. Reconsideration of the claim rejections is respectfully requested in view of the above amendments and following remarks.

Claim Rejections Under 35 U.S.C. §112

Claims 1-3 and 5-12 stand rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth on page 2 of the Final Office Action. Although Applicants respectfully disagree with the rejection, claims 1 and 7 have been amended to recite essentially that the "resistivity" of the edge ring is less than that of the wafer to be etched. Claims 1 and 7 are believed to be clear and definite and thus, withdrawal of the rejection is respectfully requested.

Claim Rejections Under 35 U.S.C. §103

Claims 1-3 and 5-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over applicants' admitted prior art (AAPR) in view of U.S. Patent No. 6,074,488 to Roderick et al. ("Roderick") and further in view of U.S. Patent No. 6,284,093 to Ke et al. ("Ke"). It is respectfully submitted that the combination of AAPR, Roderick and Ke is legally deficient to establish a *prima facie* case of obviousness against claims 1 and 7.

In the Final Office Action, it is contended that Roderick discloses (in Fig. 2 and Col. 8, lines 49-60) an edge ring (230) that is made of a low resistance semiconductor dielectric such as silicon and could be doped to further adjust resistivity or conductivity. However, Col. 8, lines 49-60, of Roderick discloses that the collar ring (230) is made from a semiconductor dielectric material that has low electrical resistance that allows DC

field components to be transmitted or conducted through the collar ring (230) and the material has a higher electrical conductivity than insulator materials and a lower electrical conductivity than metals. Roderick does not disclose in the cited section that the collar ring (230) (or edge ring) may be doped to further adjust resistivity or conductivity. Further, Roderick does not disclose that the edge ring has less resistivity that the resistivity of the wafer.

In contrast, the inventions of claims 1 and 7 recite that the *edge ring has less resistivity that the resistivity of the wafer to be etched.* In other words, in the claimed inventions, on optimum reference is provided by which the resistivity of the edge ring may be compared with a wafer to be etched and determined accordingly to provide a chuck assembly that is effectively capable of improving an etching rate at an edge portion of the wafer to be etched, thereby preventing byproducts from being formed along the edge portion of the wafer to be etched. Although Roderick discloses in Col. 8, line 66, though Col. 9, line 2, a semiconducting dielectric collar ring (230) comprising a resistivity of about $10^{-3}\Omega\,\mathrm{cm}$ to about $10^{2}\Omega\,\mathrm{cm}$, and more preferably $10^{-3}\Omega\,\mathrm{cm}$ to about $10^{1}\Omega\,\mathrm{cm}$, Roderick neither discloses nor suggests an *edge ring that has less resistivity that the resistivity of the wafer to be etched* as in the claimed inventions because Roderick teaches that the resistivity of the collar ring can be the same or greater than the resistivity of the wafer to be etched by the plasma etching process. Indeed, the range of preferred resistivity values disclosed in Roderick indicates that Roderick is not concerned with having the resistivity of the edge ring being lower than the resistivity of a wafer to be etched. Thus, Roderick actually teaches away from the claimed inventions, wherein *the edge ring has less resistivity than the resistivity of the wafer to be etched.*

Furthermore, it is contended in the Office Action that AAPR (Fig. 2) discloses an edge ring with a slanted portion that appears to be the same as of the claimed inventions, as shown in Fig. 4. Applicants respectfully disagree with such contention because Fig. 2 of Applicants' specification discloses an edge ring having a slanted step portion with a angle of about 15 degrees with respect to a vertical line, but not having the same angle as described in Applicants' specification, in which an edge ring is slanted in an angle of about 40-80 degrees relative to a normal of the wafer surface (see corresponding description, Page 6, lines 7-18 of Applicants' specification).

Further, although Ke discloses an elevated collar (30) (see Figs 2 and 3, for example) having an angle in the range of 20-55 degrees relative to a normal of the wafer surface (i.e., a 110-145 degree obtuse angle relative to the surface of the wafer) (see, e.g., Col. 18, lines 13-33), Ke discloses that a more preferred range is 30-45 degrees and that a 45 angle is preferred because is maximizes horizontal scattering (Col. 18, lines 43-45). However, Ke does not disclose or suggest an angle in the range of more than 55 degrees to 80 degrees as claimed in claims 1 and 7.

Moreover, Examiner's reliance on the spacing "S" as depicted in Fig. 4 of Ke (and the cited section Col. 11, lines 33-35) is misplaced. In particular, as shown in Fig. 4 of Ke, the spacing "S" denotes the distance between about the center of the slanted portion (32) of the collar (30) and the outer edge of the non-dielectric protective ring (50). In contrast, the claimed inventions relate to the distance "l" between the wafer and the point where the slanted step portion of the edge ring begins (see, e.g., Fig. 4 of Applicants' specification).

For at least the above reasons, the combination of AAPR, Roderick and Ke does

not disclose or suggest claimed features of claims 1 and 7. Accordingly, claims 1 and 7 are believed to be patentable over the cited art.

Therefore, withdrawal of the obviousness rejections is respectfully requested. Applicants request favorable consideration of the application as now presented.

Respectfully submitted,

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